MTH-124 Pre-Calc II Review for Test 1 Luczak

1. Construct the complete unit circle.

2. Give the angle θ such that $0 \le \theta \le 2\pi$ that is co terminal with the following angles:

   a) $\frac{13\pi}{3}$ b) $-\frac{8\pi}{3}$ c) 5π d) $\frac{19\pi}{6}$

3. Find the following. Exact answers only, if undefined state "undefined".

   a) $\cos\left(-45^\circ\right)$ b) $\sin\left(10\pi\right)$

   c) $\tan\left(-\frac{2\pi}{3}\right)$ d) $\cot\left(\frac{10\pi}{3}\right)$

   e) $\sec\left(\frac{17\pi}{6}\right)$ f) $\cot\left(\frac{3\pi}{2}\right)$

   g) $\csc\left(\frac{7\pi}{6}\right)$ h) $\tan\left(-\frac{7\pi}{3}\right)$

   i) $\sec\left(210^\circ\right)$ j) $\tan\left(-120^\circ\right)$

4. Find all θ such that $0 \le \theta \le 2\pi$ and $\sec\theta = -\sqrt{2}$.

5. Find the following. Exact answers only, if undefined state "undefined".

   a) $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ b) $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ c) $\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$ d) $\tan\left(\cos^{-1}\frac{1}{2}\right)$

   e) $\sin\left(\cos^{-1}\frac{3}{4}\right)$ f) $\csc^{-1}\left(\frac{1}{2}\right)$ g) $\cos\left[\frac{\pi}{6}+\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right]$

   h) $\tan^{-1}\left(\tan\frac{2\pi}{3}\right)$ i) $\tan\left(\tan^{-1}\frac{2\pi}{3}\right)$ j) $\cos^{-1}\left(\pi\right)$ k) $\csc\left[\tan^{-1}\left(-\frac{5}{12}\right)\right]$

6. Write $\cot\left(\cos^{-1}\left(x-1\right)\right)$ as an algebraic expression without trig or inverse trig functions.

7. Use the substitution $x = 3\cot\theta$ (assume $0 < \theta < \frac{\pi}{2}$) to simplify $y = \frac{\sqrt{9+x^2}}{x}$.

8. Show by using a right triangle that: $\cos^{-1}\frac{1}{x} = \sec^{-1}x$

9. Use your calculator to find the following. Round answers to 4 decimal places.

a) $\cot(35.6^\circ)$ b) $\sin(4.2)$ c) $\sec(181.3^\circ)$ d) $\csc(1.4)$

10. Convert from radian to degrees or from degrees to radians, you must show your work to receive credit:

a) $\frac{\pi}{48}$ b) 340° c) 71° d) 5π

11. Give the exact value of all 6 trig functions of θ.

a) If $\sin\theta = -\frac{1}{5}$ and $\sec\theta < 0$.

b) If $\tan\theta = -\frac{4}{3}$ and $\sin\theta > 0$.

c) The point $\left(-\sqrt{3}, -\sqrt{6}\right)$ is a point on the terminal of angle θ.

12. Write a function of the form $A\sin(Bx + C)$ so that the function has an amplitude of 2, period of π, and a phase shift of $\frac{\pi}{2}$.

13. Write a function of the form $A\cos(Bx + C)$ so that the function has an amplitude of 3, period of 4π, and a phase shift of $-\frac{\pi}{3}$.

14. Write a function of the form $\tan(Bx + C)$ so that the function has a period of $\frac{2\pi}{3}$, and a phase shift of $\frac{\pi}{2}$.

15. Use your calculator to find the following. Round to 4 decimal places,

a) $\sin^{-1}(-.8277)$ b) $\csc\left(\cos^{-1}(-.4081)\right)$ c) $\sin^{-1}\left(\tan(1.345)\right)$

16. State the domain and range of:

a) $\sin^{-1} x$ b) $\cos^{-1} x$ c) $\tan^{-1} x$

17. Which of the 6 trig functions are even and which are odd.